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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/768,860	01/23/2001	Eric Cheng	ADAPP173	3162

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EXAMINER

DUNCAN, MARC M

ART UNIT	PAPER NUMBER
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2113

DATE MAILED: 03/10/2004

6

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/768,860

Applicant(s)

CHENG ET AL.

Examiner

Marc M Duncan

Art Unit

2113

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2004.
2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☒ Claim(s) 4,5,9-12,16,18,19,22-30,33 and 34 is/are allowed.
6) ☒ Claim(s) 1-3,6-8,13-15,17,20,21,31 and 32 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 04 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

FINAL REJECTION

Status of the Claims

Claims 1, 2, 6, 7, 15, 20, 21 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marks et al. in view of Tanenbaum.

Claims 3, 8, 13, 14, 17 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marks and Tanenbaum, and further in view of Hall.

Claims 4, 5, 9, 10, 11, 12, 16, 18, 19, 22-30, 33 and 34 are allowed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 6, 7, 15, 20, 21 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marks et al. in view of Tanenbaum.

Regarding claims 1, 15 and 31:

Marks teaches a user interface module capable of receiving configuration parameters for a multi-path failover system from a user in col. 4 lines 33-34 and col. 6 lines 65-67.

Marks also teaches an object module capable of receiving the configuration parameters from the user interface module, wherein the object module is capable of detecting a current controller status of a controller and a current device status of a device in col. 4 lines 33-34, col. 6 line 10, col. 6 lines 65-67 and col. 9 lines 19-20.

Marks does not explicitly teach a segregated user interface. Marks does not explicitly teach a driver being configured by the object module. Marks does, however, teach an interface that allows the user to configure the controllers and set the controllers in a failover mode.

Tanenbaum teaches a segregated user interface on page 779 figure 11-7 and page 288 figure 5-10, page 289 and page 290 figure 5-11. Tanenbaum teaches a driver being configured on page 288 figure 5-10. It should be noted that Tanenbaum is a reference book that teaches of systems that are well known and have been in common use in the past.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the Marks teachings of a failover system that is user configured with the Tanenbaum teachings of a segregated user interface in which a driver is configured to result in a failover system with a segregated user interface.

One of ordinary skill in the art at the time of invention would have been motivated to combine the teachings because while Marks does not explicitly teach the segregated

interface and the driver configuration, Marks does teach a failover system in which the user is able to change the configuration of controllers through a user interface.

Tanenbaum teaches that it was common knowledge that drivers are necessary to communicate with and access a system's hardware, i.e. the controllers of Marks. It is also taught by Tanenbaum that the drivers in such a system were contained in the kernel space, as opposed to the user space, thereby resulting in a segregated interface. It would therefore have been common knowledge to one of ordinary skill in the art at the time of invention to include the segregated interface and driver teachings of Tanenbaum with the failover system of Marks.

Regarding claim 2:

Marks teaches the user interface module being capable of displaying the current controller status and the current device status in col. 4 lines 33-34. The examiner considers some display of the status to be inherent to user directed status reporting.

Regarding claims 6 and 20:

Marks teaches disabling and enabling failover features for a particular data path in col. 9 lines 19-20.

Regarding claims 7 and 21:

Marks teaches the failover feature being an ability to reroute an I/O request destined for a particular I/O device when a primary data path to the I/O device has failed in the Abstract lines 5-7.

Claims 3, 8, 13, 14, 17 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marks and Tanenbaum as applied to claims 1 above, and further in view of Hall.

Regarding claims 3, 17 and 32:

The teachings of Marks are outlined above.

Marks does not explicitly teach LUN masking parameters. Marks does, however, teach allocating the LUNs to specific controllers in col. 7 lines 16-18.

Hall explicitly teaches LUN masking parameters in paragraphs 0007-0011.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the LUN masking system of Hall with the LUN allocation teaching of Marks.

One of ordinary skill in the art at the time of invention would have been motivated to combine the teachings because Marks teaches that each controller is allocated its own specific LUNs. Hall teaches a method of allocating LUNs to each controller such that each controller accesses only a certain number of LUNs allocated to it. Hall also teaches that by using the particular method of Hall, LUN masking can be achieved relatively inexpensively with only minimal operating system modification in paragraph 0012.

Regarding claim 8:

The claim is rejected as the method of operating the apparatus of claims 1-3.

Regarding claim 13:

The claim is rejected as the method of using the apparatus of claims 1-3 and 6.

Regarding claim 14:

The claim is rejected as the method of using the apparatus of claims 1-3 and 7.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter in claim 16: Prior art was not found that explicitly teaches or fairly suggests calculating a failure probability for each detected path based on respective prior and current status of the multi-path and to select the path having the lowest probability of failure as outlined in claim 16.

Response to Arguments

Applicant's arguments filed 2/10/04 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, applicant has argued that the Tanenbaum reference teaches away from the Marks reference by stating that the use of drivers in kernel space has been known to cause systems to crash. The examiner agrees that this would appear to teach away from the idea of a

failover system. The examiner, however, feels it necessary to point out that a rejection under 35 USC 103 requires one of ordinary skill **at the time of invention** to be motivated to combine the two references. As applicant notes, Tanenbaum teaches that it would be **possible** and a **good idea** to construct drivers that run in user space.

Tanenbaum then goes on to state that, in fact, drivers are not placed in user space and that current architectures, i.e. architectures available and known to those of ordinary skill at the time of invention, expect the driver to be a part of the kernel and thus would require such a structure. The examiner has therefore determined that one of ordinary skill at the time of invention would have been motivated to make use of the available architectures and therefore to combine the teachings of Marks and Tanenbaum.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc M Duncan whose telephone number is 703-305-4622. The examiner can normally be reached on M-T and TH-F 6:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on 703-305-9713. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

md


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